



UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Kapeles
Appl. Serial No.: 10/674,047
Filed: 09/29/2003
For: Frangible Non-Lethal Projectile
Art Unit: 3641
Examiner: Clement

APPEAL BRIEF

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(1) **Real Parties in Interest:**

The real party in interest is Defense Technology Corporation of America,
the assignee of record, which is a subsidiary of Armor Holdings, Inc.

(2) **Related Appeals and Interferences:**

None.

(3) Status of Claims:

Claims 1, 3, 6-10, 12 and 13 are withdrawn.

Claims 2, 4, 5, 11, 15, 17, 24 and 31 are canceled.

Claims 14, 16, 18-23, 25-30 and 32 are rejected and are on appeal.

(4) Status of Amendments:

All amendments have been entered. No amendments were filed subsequent to final rejection or the notice of appeal.

(5) Summary of Claimed Subject Matter:

There are two independent claims involved in this appeal.

Claim 14

The first independent claim involved in this appeal is claim 14:

14. (previously presented) A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base, said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is crushed upon impact with a target in a manner that absorbs and dissipates energy of impact, said projectile nose comprising a cavity;

wherein said projectile nose has a rounded forward end and a cylindrical wall, said cylindrical wall being thinner than said forward end, such that said thinner cylindrical wall breaks prior to said forward end upon impact to absorb and dissipate impact energy.

The subject matter of this claim 14, with reference to the specification and drawings, is:

a non-lethal impact munition (*page 7, lines 7-15, page 8, lines 2-3, and Figures 1 and 2*) comprising:

a projectile 20/30 (*combined*) comprising a projectile nose 30 and a projectile base 20 (*page 8, line 3 and Figures 1 and 2*),

said projectile 20/30 separably joined (*page 8, lines 14-15*) to a propulsion shell 10 comprising propulsion means 13 to separate said projectile 20/30 from said propulsion shell 10 (*page 8, lines 10-14 and page 10, lines 11-12*);

said projectile nose 30 composed of a frangible, rigid, polymer foam material (*page 9, lines 1-3*)

characterized in that said projectile nose 30 is crushed upon impact with a target in a manner that absorbs and dissipates energy of impact (*page 9, lines 5-7, page 10, lines 14-16, page 11, lines 2-4, page 11, lines 6-10, and Figure 3*),

said projectile nose 30 comprising a cavity 33 (*page 9, lines 15-17 and Figure 2*);

wherein said projectile nose 30 has a rounded forward end 31 and a cylindrical wall 32 (*page 9, lines 1-2 and Figures 1 and 2*),

said cylindrical wall 32 being thinner than said forward end 31 (*page 9, lines 10-11 and Figure 2*),

such that said thinner cylindrical wall 32 breaks prior to said forward end 31 upon impact to absorb and dissipate impact energy (*page 9, lines 11-12, page 10, lines 14-16 and Figure 3*).

In more concise explanation form, the subject matter defined in claim 14 is:

A non-lethal impact munition (*page 7, lines 7-15, page 8, lines 2-3, and Figures 1 and 2*) comprising a projectile 20/30 (*combined*) separably joined to a shell 10 (*page 8, lines 14-15*), the shell 10 containing propulsion means 13 to separate the projectile 20/30 from the shell 10 (*page 8, lines 10-14 and page 10, lines 11-12*). The projectile 20/30 comprises a base 20 and a nose 30 (*page 8, line 3 and Figures 1 and 2*), the nose 30 being composed of a frangible, rigid polymer foam (*page 9, lines 1-3*) and having a cavity 33 (*page 9, lines 15-17 and Figure 2*). The cylindrical wall 32 of the nose 30 is thinner than the rounded forward end 31 (*page 9, lines 10-11 and Figure 2*). Upon impact, the cylindrical wall 32 of the nose 30 crushes prior to the rounded forward end 31, thereby absorbing and dissipating energy (*page 9, lines 11-12, page 10, lines 14-16 and Figure 3*).

Claim 14 contains means plus function language, to wit:

propulsion means 13 to separate said projectile 20/30 from said
propulsion shell 10

and the structure, material or acts described in the specification as corresponding to the claimed function are set forth at page 8, lines 10-14, page 10, lines 11-12 and Figures 2 and 3.

Claim 27

The second independent claim involved in this appeal is claim 27:

27. (previously presented) A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base, said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said propulsion shell further comprising an annular forward wall having a forward shell rim, a shell base joined to said shell forward wall, and a propulsion cavity disposed in said shell base, said propulsion means being retained by said propulsion cavity;

said projectile base comprising a forward wall joined to a cylindrical wall to define a projectile cavity, and a rearward extending annular insertion flange, whereby said insertion flange is received within said shell rim and said shell forward wall such that said shell cavity and said projectile cavity are combined;

said projectile nose comprising a rear plug wall joined to a cylindrical wall and a forward end joined to said cylindrical wall, the combination of said forward end, said cylindrical wall and said rear plug wall defining a nose cavity, said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is sufficiently rigid to maintain aerodynamic stability during flight but is sufficiently frangible to crush upon impact with a target in a manner that absorbs and dissipates energy of impact to reduce the energy transferred to such target by said projectile; and

a payload disposed within said cavity of said projectile nose, whereby said payload is laterally dispersed from said projectile nose upon impact, such that additional energy of impact is dissipated to reduce the energy transferred to such target by said projectile.

The subject matter of this claim 27, with reference to the specification and drawings, is:

A non-lethal impact munition (*page 7, lines 7-15, page 8, lines 2-3, and Figures 1 and 2*) comprising:

a projectile 20/30 comprising a projectile nose 30 and a projectile base 20 (*page 8, line 3 and Figures 1 and 2*),

said projectile 20/30 separably joined (*page 8, lines 14-15*) to a propulsion shell 10 comprising propulsion means 13 to separate said projectile 20/30 from said propulsion shell 10 (*page 8, lines 10-14 and page 10, lines 11-12*);

said propulsion shell 10 further comprising an annular forward wall 14 having a forward shell rim 16, a shell base 11 joined to said shell forward wall 14, and a propulsion cavity 12 disposed in said shell base 11, said propulsion means 13 being retained by said propulsion cavity 12 (*page 8, lines 8-13 and Figure 2*);

said projectile base 20 comprising a forward wall 21 joined to a cylindrical wall 22 to define a projectile cavity 23 (*page 8, lines 15-17 and Figure 2*),

and a rearward extending annular insertion flange 25 (*page 8, lines 17-19 and Figure 2*),

whereby said insertion flange 25 is received within said shell rim 16 and said shell forward wall 14 such that said shell cavity 15 and said projectile cavity 23 are combined (*page 8, lines 19-21 and Figure 2*);

said projectile nose 30 comprising a rear plug wall 34 joined to a cylindrical wall 32 (*page 10, lines 4-5 and Figure 2*)

and a forward end 31 joined to said cylindrical wall 32 (*page 9, lines 1-2 and Figures 1 and 2*),

the combination of said forward end 31, said cylindrical wall 32 and said rear plug wall 34 defining a nose cavity 33 (*page 9, lines 15-17 and Figure 2*),

said projectile nose 30 composed of a frangible, rigid, polymer foam material (*page 9, lines 1-3*)

characterized in that said projectile nose 30 is sufficiently rigid to maintain aerodynamic stability during flight (*page 7, lines 20-22 and page 9, lines 3-5*)

but is sufficiently frangible to crush upon impact with a target in a manner that absorbs and dissipates energy of impact to reduce the energy transferred to such target by said projectile 20/30 (*page 9, lines 5-7, page 10, lines 14-16, page 11, lines 2-4, page 11, lines 6-10, and Figure 3*); and

a payload 35 disposed within said cavity 33 of said projectile nose 30 (*page 9, lines 15-21 and Figure 2*),

whereby said payload 35 is laterally dispersed from said projectile nose 30 upon impact, such that additional energy of impact is dissipated to reduce the energy transferred to such target by said projectile 20/30 (*page 9, lines 16-17 and page 9, line 21 to page 10, line 2 and Figure 3*).

In more concise explanation form, the subject matter defined in claim 27 is:

A non-lethal impact munition (*page 7, lines 7-15, page 8, lines 2-3, and Figures 1 and 2*) comprising a projectile 20/30 (*combined*) separably joined to a shell 10 (*page 8, lines 14-15*), the shell 10 containing propulsion means 13 to separate the projectile 20/30 from the shell 10 (*page 8, line 11 and page 10, lines 11-12*). The shell 10 comprises an annular forward wall 14 with a forward shell rim 16, a shell base 11 joined to the shell forward wall 14, and a propulsion cavity 12 to retain propulsion means 13 (*page 8, lines 8-13 and Figure 2*). The projectile 20/30 comprises a base 20 and a nose 30 (*page 8, line 3 and Figures 1 and 2*).

The projectile base 20 comprises a forward wall 21 joined to a cylindrical wall 22, defining a projectile cavity 23 (*page 8, lines 15-17 and Figure 2*) and a rearward extending annular insertion flange 25 (*page 8, lines 17-19 and Figure 2*) received within the shell rim 16 and the shell forward wall 14 to combine the shell cavity 15 and the projectile cavity 23 (*page 8, lines 19-21 and Figure 2*).

The projectile nose 30 comprises a rear plug wall 34 joined to a cylindrical wall 32 (*page 10, lines 4-5 and Figure 2*) and a forward end 31 joined to the cylindrical wall 32 (*page 9, lines 1-2 and Figures 1 and 2*), all combining to form a nose cavity 33 (*page 9, lines 15-17 and Figure 2*). The nose 30 is composed of a frangible, rigid polymer foam (*page 9, lines 1-3*) sufficiently rigid to maintain aerodynamic stability during flight (*page 7, lines 20-22 and page 9, lines 3-5*) but sufficiently frangible to crush upon impact with a target in a manner that absorbs and dissipates energy of impact to reduce the energy transferred to such target by the projectile 20/30 (*page 9, lines 5-7, page 10, lines 14-16, page 11, lines 2-4, page 11, lines 6-10, and Figure 3*). A payload 35 is disposed within the nose cavity 33 (*page 9, lines 15-21 and Figure 2*), which is

laterally dispersed upon impact, such that additional energy of impact is dissipated (*page 9, lines 16-17 and page 9, line 21 to page 10, line 2 and Figure 3*).

Claim 27 contains means plus function language, to wit:

propulsion means 13 to separate said projectile 20/30 from said
propulsion shell 10

and the structure, material or acts described in the specification as corresponding to the
claimed function are set forth at page 8, lines 10-14, page 10, lines 11-12 and Figures 2 and 3.

(6) Grounds of Rejection to be Reviewed on Appeal:

I. Whether claims 14, 16, 18-23 and 25-30 are unpatentable under 35 U.S.C. 103(a) over Barr et al. (US Patent No. 3,911,824) and Klein (US Patent Application Publication No. 2004/0069177).

II. Whether claims 27 and 32 are unpatentable under 35 U.S.C. 103(a) over Barr (US Patent No. 3,865,038), Barr et al. (US Patent No. 3,911,824) and Klein (US Patent Application Publication No. 2004/0069177).

(7) Argument:

I. Whether claims 14, 16, 18-23 and 25-30 are unpatentable under 35 U.S.C. 103(a) over Barr et al. (US Patent No. 3,911,824) and Klein (US Patent Application Publication No. 2004/0069177).

A rejection under Section 103(a) requires that the combined prior art references teach or suggest all the claim limitations (MPEP 706.02(j), further based on the requirements of Graham v. John Deere, 383 U.S. 1, 148 459 (1966) and MPEP 2141-2144.9).

As to claim 14 and the claims dependent thereupon, the invention at hand requires a projectile comprising a projectile nose 30 and projectile base 20, the projectile being joined to a propulsion shell 10 (numbers referring to elements in the drawings of the application at hand). Barr et al. '824 discloses a projectile 51 comprising a nose 53 (equivalent to the projectile nose 30 of Applicant) and a base 55 (equivalent to the projectile base 20 of Applicant), the projectile 51 being joined to a case 21 (equivalent to the propulsion shell 10 of Applicant).

The Examiner states that the nose 53 of Barr et al. '824 has a cylindrical wall that is thinner than the forward end "such that the thinner cylindrical wall breaks prior to the forward end upon impact". This is not correct. In device of the '824 patent, it is the wall of the projectile base housing 55 that ruptures, not the cylindrical wall of the nose 53. At col. 4, lines 20+ of the '824 patent it is clearly stated:

"On impact of the nose 53b of the projectile with a target or other object, the flexible wall 53a is flexed inwardly by the target resistive driving force on the piston-forming thick nose 53b and the inertial forces of the projectile, which tends to result in the piston-forming nose being effectively driven rearward into the cavity 57,

and the base housing cavity side walls 55a, 55f are pressurized and rupture along one or more of corners 55a”

Thus, it is the base 55 of the Barr et al. ‘824 device that ruptures, not the nose 53. The design of the nose 53 is such that it acts as a piston, pressurizing the cavity 57 to burst the base housing 55. If the nose 53 ruptures, it will not act as a piston and cause rupture of the base housing 55.

Furthermore, substituting the frangible foam nose 18 taught in Klein ‘177 would not result in a functional device, since any rupture of the nose element in the Barr et al. ‘824 device would not cause the device to function properly. The Examiner states that Barr et al. ‘824 discloses the nose to be composed of a “rigid” material. This is not correct. The ‘824 patent clearly defines the nose to be composed of a soft, elastic material (col. 3, lines 24-31). Substitution of the frangible, rigid nose of Klein ‘177 for the nose in Barr et al. ‘824 would not be obvious, and there is no suggestion or motivation to do so in light of the fact such a substitution would make the Barr et al. ‘824 device inoperable in its intended manner. Without a resilient nose 53 acting as a piston, the base housing 55 would not rupture along one or more of its corners 55a as described. With no rupture of the base housing 55, dispersal of the payload would be minimal, since the majority of the payload is contained within the portion of the cavity formed by the cylindrical wall of the base housing 55. The rigid foam noses of Applicant and Klein ‘177 dissipate energy upon impact, they do not direct that energy into the cavity as is required in the Barr et al. ‘824 device.

With regard to the other independent claim, claim 27, the Examiner further states that the projectile nose of Barr et al. ‘824 comprises “a rear plug wall joined to the cylindrical wall”. This is not correct. The nose 53 has no rear wall, only a rim surrounding the forward portion of the cavity 57. In actuality, it is the base housing 55 of the ‘824 device that comprises a rear wall.

The nose 53 of the '824 device has no rear wall - it must be open for the nose 53 to act as a piston for pressurization of the cavity 57. Claim 27 requires the presence of a rear plug wall 34 as part of the nose 30. Adding this required structure to the Barr et al. '824 device would result in a non-functional device.

The Examiner states that the projectile base 55 of Barr et al. '824 comprises a forward wall (?) joined to a cylindrical wall to define a projectile cavity and a rearward extending annular insertion flange. The structure of the Barr et al. '824 projectile base 55 has no forward wall 21, has no projectile cavity 23 and no rearward extending annular flange 25 (i.e., a ring-like extended rim or collar) as required by claim 27. The base housing 55 instead has a forward rim 55fw, a payload cavity 57, and a rearward extending cylinder 55g. Furthermore, claim 27 requires that the projectile cavity 23 combine with the shell cavity 15. The projectile base housing 55 of Barr et al. '824 is separated from the shell cavity by of cartridge 11 by a pusher disc 41 and the sabot 31.

As argued previously and in more detail relative to claim 14, the combination of the teachings from Klein '177 is not suggested, motivated or made obvious regarding use of a rigid and frangible nose member, since such a nose would not dissipate the energy of impact (as required by the claims), but would render the Barr et al. device non-functional since there would be no directed piston-like action to burst the base housing 55.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to

make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). To claim prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, F.2d 981, 180 USPQ 580 (CCPA 1974). All the holdings above are applicable to the case at hand.

It is respectfully submitted that the independent claims are patentable on the basis of the above arguments, and therefore all the dependent claims are also allowable. It is respectfully submitted that the claims as presented are patentable, on the basis of the above remarks, and reconsideration and subsequent passage for allowance is hereby requested.

II. Whether claims 27 and 32 are unpatentable under 35 U.S.C. 103(a) over Barr (US Patent No. 3,865,038), Barr et al. (US Patent No. 3,911,824) and Klein (US Patent Application Publication No. 2004/0069177).

The Examiner also rejects claim 27 as obvious over Barr '038 with the previously cited prior art. It is submitted that Barr '038 does not provide any more reasoned basis for the rejections. Barr '038 teaches a projectile having a base 31 and a nose 23 made of a resilient, elastic material. Contrary to the statement of the Examiner, the projectile base 31 of the Barr '038 device has no structure defining a projectile cavity - there is only a payload cavity. Additionally, there is no rearward extending annular insertion flange (i.e., a ring-like extended rim or collar) in the projectile of Barr '038. The Examiner also states that Barr '038 discloses a projectile with a nose comprising a rear plug wall. The nose 23 comprises no rear plug wall - the rear of the nose 23 is a rim with a large opening, and is only sealed by the base 31.

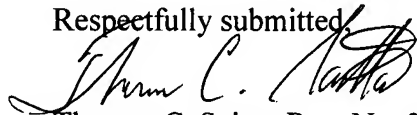
For the same reasons more thoroughly articulated above, it is reiterated that the combination of the teachings of Barr '036, Barr et al. '824 and Klein '177 would not result in a functioning device, and therefore there is no justification, rationale or motivation that would lead one to combine these teachings. The independent claims have required elements and combinations that result in required functions that are not made obvious by the combination of the cited prior art. As stated in MPEP 2143, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. There must be a reasonable expectation of success. The prior art must teach or suggest all the claims limitations. It is submitted that these three criteria are not met in this case.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). To claim prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, F.2d 981, 180 USPQ 580 (CCPA 1974). All the holdings above are applicable to the case at hand.

It is respectfully submitted that the independent claims are patentable on the basis of the above arguments, and therefore all the dependent claims are also allowable. It is respectfully submitted that the claims as presented are patentable, on the basis of the above remarks, and reconsideration and subsequent passage for allowance is hereby requested.

For the reasons set forth above, it is respectfully requested that the final rejection of the claims at issue be reversed in whole, and that the claims be passed for allowance and issue.

Respectfully submitted,

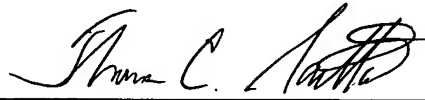


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The undersigned certifies that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.

5/25/07
Date



Thomas C. Saitta

(8) Claims Appendix:

1. (withdrawn) A non-lethal projectile comprising:

a projectile nose joined to a projectile base;

said projectile nose comprising a cavity;

a payload disposed within said cavity; and

said projectile nose composed of a frangible, rigid, polymer foam material;

wherein said projectile nose has a rounded forward end and a cylindrical wall, said cylindrical wall being thinner than said forward end, such that said thinner cylindrical wall breaks prior to said forward end upon impact to absorb and dissipate impact energy and such that said payload is dispersed laterally through said cylindrical wall in multiple directions upon impact.

2. (canceled)

3. (withdrawn) The projectile of claim 1, wherein said foam material has a density between approximately 8 and 14 pounds per cubic foot.

4. (canceled)

5. (canceled)

6. (withdrawn) The projectile of claim 1, wherein said payload is chosen from the group of payloads consisting of marker agents, lacrimators, irritants, inflammatory agents, odorants and inert powders.

7. (withdrawn) The projectile of claim 1, said projectile nose further comprising a rear plug wall joined to said cylindrical wall, the combination of said forward end, said cylindrical wall and said rear plug wall defining said nose cavity.

8. (withdrawn) The projectile of claim 7, wherein said payload is chosen from the group of payloads consisting of marker agents, lacrimators, irritants, inflammatory agents, odorants and inert powders.

9. (withdrawn) The projectile of claim 7, wherein said rear plug wall is joined to said projectile base.

10. (withdrawn) The projectile of claim 1, wherein said foam material is a polyurethane.

11. (canceled)

12. (withdrawn) The projectile of claim 7, wherein said projectile base comprises a forward wall joined to a cylindrical wall.

13. (withdrawn) The projectile of claim 12, wherein said projectile base comprises a forward wall joined to a cylindrical wall, and wherein said rear plug wall is joined directly to said forward wall of said projectile base.

14. (previously presented) A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base, said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is crushed upon impact with a target in a manner that absorbs and dissipates energy of impact, said projectile nose comprising a cavity;

wherein said projectile nose has a rounded forward end and a cylindrical wall, said cylindrical wall being thinner than said forward end, such that said thinner cylindrical wall breaks prior to said forward end upon impact to absorb and dissipate impact energy.

15. (canceled)

16. (original) The munition of claim 14, wherein said foam material has a density between approximately 8 and 14 pounds per cubic foot.

17. (canceled)

18. (previously presented) The munition of claim 14, further comprising a payload disposed within said cavity, wherein said payload is laterally dispersed from said cavity upon impact through said thinner cylindrical wall.

19. (original) The munition of claim 18, wherein said payload is chosen from the group of payloads consisting of marker agents, lacrimators, irritants, inflammatory agents, odorants and inert powders.

20. (previously presented) The munition of claim 14, said projectile nose further comprising a rear plug wall joined to said cylindrical wall, the combination of said forward end, said cylindrical wall and said rear plug wall defining a nose cavity.

21. (previously presented) The munition of claim 20, further comprising a payload disposed within said nose cavity, wherein said payload is chosen from the group of payloads consisting of marker agents, lacrimators, irritants, inflammatory agents, odorants and inert powders.

22. (previously presented) The munition of claim 20, wherein said rear plug wall is joined to said projectile base.

23. (original) The munition of claim 14, wherein said foam material is a polyurethane.

24. (canceled)

25. (previously presented) The munition of claim 14, wherein said projectile base comprises a forward wall joined to a cylindrical wall.

26. (original) The munition of claim 20, wherein said projectile base comprises a forward wall joined to a cylindrical wall, and wherein said rear plug wall is joined to said forward wall of said projectile base.

27. (previously presented) A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base, said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said propulsion shell further comprising an annular forward wall having a forward shell rim, a shell base joined to said shell forward wall, and a propulsion cavity disposed in said shell base, said propulsion means being retained by said propulsion cavity;

said projectile base comprising a forward wall joined to a cylindrical wall to define a projectile cavity, and a rearward extending annular insertion flange, whereby said insertion flange is received within said shell rim and said shell forward wall such that said shell cavity and said projectile cavity are combined;

said projectile nose comprising a rear plug wall joined to a cylindrical wall and a forward end joined to said cylindrical wall, the combination of said forward end, said cylindrical wall and said rear plug wall defining a nose cavity, said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is sufficiently rigid to maintain aerodynamic stability during flight but is sufficiently frangible to crush upon impact with a target

in a manner that absorbs and dissipates energy of impact to reduce the energy transferred to such target by said projectile; and

a payload disposed within said cavity of said projectile nose, whereby said payload is laterally dispersed from said projectile nose upon impact, such that additional energy of impact is dissipated to reduce the energy transferred to such target by said projectile.

28. (previously presented) The munition of claim 27, said cylindrical wall being thinner than said forward end.

29. (original) The munition of claim 27, wherein said foam material has a density between approximately 8 and 14 pounds per cubic foot.

30. (original) The munition of claim 27, wherein said payload is chosen from the group of payloads consisting of marker agents, lacrimators, irritants, inflammatory agents, odorants and inert powders.

31. (canceled)

32. (previously presented) The munition of claim 27, wherein said rear wall of said projectile nose is joined directly to said forward wall of said projectile base.

(9) Evidence Appendix

None.

(10) Related Proceedings Appendix

None.